

REMARKS

The Examiner is thanked for the thorough examination of the present application. The FINAL Office Action, however, continued to reject all examined claims. In response, Applicant submits the foregoing amendments and the following remarks. Specifically, the Office Action rejected claims 1-2, 5-7 and 9-10 under 35 U.S.C. 103(a) as allegedly being unpatentable over Nonweiler (US 5,483,296) in view of Watkins (US 6,728,477). The Office Action further rejected claims 12-13, 16-18, 20, 26, 28, 30-31, and 33-35 under 35 U.S.C. 103(a) as allegedly being unpatentable over Nonweiler in view of Watkins and Crinon (US 6,285,804). In response, Applicant submits the foregoing amendments and the following remarks.

Amendments to the Claims

Applicant has amended independent claims 1, 12, 26, and 31 to more clearly define over all rejections of these claims. Further, claim 36 is newly added to clarify the step of decomposing the high-resolution image. Simply stated, the features added by the foregoing amendments are not disclosed in the applied references, nor were they contemplated by the Office Action. Consequently, the foregoing amendments render the rejections moot. Notwithstanding, Applicant sets forth the following additional comments.

General Discussion of Rejections

One characteristic of the embodiments of the present application is to decompose a high-resolution image data into a plurality of primary image data of standard image resolution. Next, the plurality of primary image data of standard image resolution are respectively stored in the video-audio data format and the user data format of the medium with the existed standard image format, such as the primary viewing angle setting format and the secondary viewing angle setting the format of DVD, or the video-audio data format and the user data format of VCD. Thereby, the image resolution is increased.

Further still, according to the specification of the present invention, apparently the decomposing step of the claim 1 is different from Nonweiler's TV's de-interlaced method. As described on page 5, "The preferred embodiment of the present invention decomposes the high-resolution image 1 into four standard-resolution images 2 and then stores each of these standard-resolution images in data format of different viewing angle on the DVD. In other words, the four standard-resolution images 2 are stored separately in data format of primary viewing angle, a first secondary viewing angle, a second secondary viewing angle and a third secondary viewing angle of the DVD." Each primary image is then encoded and playable.

In Nonwiler (TV field), each de-interleaved field cannot be played unless the odd and even numbered lines are interlaced/combined together. In the present application, although only the specific playback apparatus comprising a image-combining unit can

play the high-resolution image according to the above method, on the other hand, other playback apparatus can still play back the encoded primary image data of standard resolution image if the standard resolution is required because of the step of "encoding at least one primary image data to form a disc playable image data." Thus, Nonwiler teaches away from the present invention. Since each step of claim 1 is interconnected, they cannot be treated in isolation with the different prior art references.

Note that the way to play back the high-resolution image is described on page 6-7, where it provides the statement of "when playing the high-resolution image on the DVD of the present invention, the high-resolution image can be combined and restored back by accordingly acquiring each pixel at the same position on each primary image data of the four secondary viewing angles (106)."

In response to the rejections made by the Examiner, who stated that "interleaved fields, odd and even numbered lines and DVD field," Applicant asserts that this description are not mentioned in the claims of the present application. Especially the high resolution image of the present application is not divided into odd or even numbered lines, but rather is decomposed into different image resolutions in 2-dimension, as described in new added claim 36, so that each image data can be separately stored.

In addition, the mentioned odd/even numbered lines of Nonwiler cannot be separately stored and played back, as described on page 6 of present application, "According to this procedure of high-resolution image decomposition, the whole

high-resolution image 1 can be evenly distributed into image data of four standard resolution images 2 (step 100). The four standard-resolution images are then separately stored in image data format of one primary viewing angle and three secondary viewing angle of the DVD."

Claims 1-7 and 9-10

As amended herein, independent claim 1 recites:

1. A method for enhancing image resolution, wherein the method is applied to a high-resolution image data carrier for storing or playing a high-resolution image at least twice the standard image resolution, the method comprising the following steps:
defining a video-audio data format and a plurality of user data formats on the high-resolution image data carrier;
decomposing the high-resolution image into a plurality of primary images data of standard image resolution;
encoding at least one primary image data to form a disc playable image data;
storing one set of the primary image data into the video-audio data format of the high-resolution image data carrier and storing another primary image data set separately into the plural of user data formats;
playing back one set of the primary image data from the video-audio data format by any playback apparatus if low resolution is required; and
combining one set of the primary image data from the video-audio data format and another primary image data from the user data formats to form a combined playable image data and playing back the combined playable image data by a specific playback apparatus if high resolution is required;
wherein the specific playback apparatus comprises:
a readout unit for reading out the plural user data formats on the high-resolution image data carrier; and
an image-combining unit for acquiring the primary image data at a same position of the user data format to combine and restore the high-resolution image.

(*Emphasis added*). Claim 1 patently defines over the cited art for at least the reason that the cited art fails to disclose the features emphasized above. Simply stated, the

emphasized feature was added by the amendment herein, and was not even contemplated by the Office Action.

As claims 2-7 and 9-10 depend from claim 1, these claims define over the cited art for at least the same reasons.

Claims 12-18 and 20

As amended herein, independent claim 12 recites:

12. A method for enhancing the image resolution, wherein the method is applied to a high-resolution image data carrier for storing or playing a high-resolution image that is at least twice the standard resolution, the method comprising the following steps:
 setting the high-resolution image data carrier to have a video-audio data format and plural user data format;
 decomposing the high-resolution image into plural primary image data of standard image resolution;
 storing the plural primary image data into the user data format;
 calculating an average of the pixels at the same positions in the plural primary image data for forming a secondary image data;
 encoding the secondary image data to form a disc playable image data;
 storing the secondary image data into the video-audio data format of the high-resolution image data carrier;
 playing back the secondary image data from the video-audio data format by any playback apparatus if standard resolution is required; and
 combining and restoring secondary image data from the video-audio data formats and another primary image data from the user data formats to form the high-resolution image and playable by a specific playback apparatus if high resolution is required;
 wherein the specific playback apparatus comprises:
 a readout unit for reading out the plural user data formats on the high-resolution image data carrier; and
 an image-combining unit for acquiring the secondary image data and the primary image data at a same position of the user data format to combine and restore the high-resolution image.

(*Emphasis added*). Claim 12 patently defines over the cited art for at least the reason that the cited art fails to disclose the features emphasized above.

With regard to both of the above-emphasized features, the Office Action (p. 10) cited col. 6, lines 15-17 or Nonweiler as teaching these features. For each emphasized element, the Office Action stated that this portion of Nonweiler teaches “the reverse procedure is employed when data is transferred from the disk stores to the manipulation framestore 15.” Simply stated, this rejection is misplaced. In fact, the entire paragraph of Nonweiler (col. 6, lines 7-17) states:

One way in which image frame data can be stored in the disk stores 1 to 8 will now be described with reference to FIG. 3 of the accompanying drawings. For the purpose of explanation it will be assumed that data is being transferred from the manipulation framestore 15 to the disk stores but it will be appreciated that the data may come from a different source such as an external bulk store or from film or printed picture scanners. It should also be appreciated that the reverse procedure is employed when data is transferred from the disk stores to the manipulation framestore 15.

Reviewing the cited language in the context in which it was presented in Nonweiler, it can be seen that it simply has no applicability to the features being rejected. In this regard, there is simply no relevant teaching related to the features of:

combining and restoring secondary image data from the video-audio data formats and another primary image data from the user data formats to form the high-resolution image and playable by a specific playback apparatus if high resolution is required;

...
an image-combining unit for acquiring the secondary image data and the primary image data at a same position of the user data format to combine and restore the high-resolution image.

As such, the rejection of claim 12 is clearly misplaced and should be withdrawn.

As claims 13-18 and 20 depend from claim 12, these claims define over the cited art for at least the same reasons.

Claims 26-28 and 30

Independent claim 26 recites:

26. An apparatus for encoding picture data to enhance image resolution and storing the high-resolution image at least twice the standard image resolution to a image data carrier, the encoding apparatus comprising at least:

an image-decomposing unit, for reading out the high-resolution image and decomposing the high-resolution image into plural primary image data of standard image resolution;

an image operation unit, for calculating an average value of pixels at the same position from plural primary image data for forming secondary image data;

an image-encoding unit utilizing an image compression technique to encode the primary and secondary image data and form a playable image data;

an image storage unit, separately storing the plural primary image data into plural user data format of the image data carrier; and storing the secondary image data in a video-audio data format of the image data carrier;

an image-combining unit for acquiring the secondary image data from the video-audio data format and the primary image data from the user data format to form a combined playable image data; and

a playing unit for playing back one set of the primary image data from the video-audio data format if low resolution is required and playing back the combined playable image data if high resolution is required.

(*Emphasis added*). Claim 26 patently defines over the cited art for at least the reason that the cited art fails to disclose the features emphasized above.

In addition, the rejection of claim 26 was based on the selective combination of Nonweiler in view of Watkins and Crinon. Applicant submits that the combination (even assuming the references can be properly combined) fails to disclose the claimed

feature of: "playing back one set of the primary image data from the video-audio data format by any playback apparatus if standard image is required; and combining one set of the primary image data from the video-audio data format and another primary image data from the user data formats to form a combined playable image data and playing back the combined playable image data by a specific playback apparatus if high resolution is required," as now claimed. In detail, Nonwiler teaches away from the decomposing step of the present invention. Moreover, Watkin does not disclose the way to determine whether it is a standard resolution image or a high resolution image and playable by a specific player.

The Applicant further emphasizes that a central idea of the present invention is that "plural primary image data are combined and restored to form a high-resolution image," in which each primary image data is decomposed from the high-resolution image by 2-D decomposition - *i.e.*, by "evenly decomposing and distributing the plural image pixels of the high-resolution image, adjacent along a vertical direction and a horizontal screen on a screen, into corresponding plural pixels of primary image data."

For at least these reasons, claim 26 patently defines over the cited art. For at least the same reasons, dependent claims 27-28 and 30 define over the prior art.

Claims 31-35

The Office Action rejected claim 31 based on the selective combination of Nonweiler in view of Watkins and Crinon. Specifically, the Office Action said that claim

31 was rejected on the same basis as claim 26 (and the Office Action said that claim 26 was rejected on the same basis as claim 12). Applicant respectfully disagrees. In this regard, independent claim 31 recites:

31. A playback apparatus for playing the resolution enhanced image, which plays a high-resolution image data carrier with at least twice a standard image resolution, the playback apparatus at least comprising:

a readout unit to read out the plural user data format on the high-resolution image data carrier; and

an image-combining unit to acquire each pixel at a same position of every user data format to combine and restore the high-resolution image.

(Emphasis added). Claim 31 patently defines over the cited art for at least the reason that the cited art fails to disclose the features emphasized above.

With specific regard to the emphasized feature, the Office Action (in its rejection of claim 12 on page 10) stated that this feature is taught in col. 6, lines 15-17 of Nonweiler. As set forth above, in connection with claim 12, this cited portion of Nonweiler merely states: “It should also be appreciated that the reverse procedure is employed when data is transferred from the disk stores to the manipulation framestore 15.” Even considering the preceding text (to place this statement in context), there is simply no relevant teaching in Nonweiler that relates to the claimed feature of: “an image-combining unit to acquire each pixel at a same position of every user data format to combine and restore the high-resolution image.” For at least this reason, the

rejection of claim 31 should be withdrawn. As claims 32-35 depend from claim 31, the rejections of those claims should be withdrawn as well.

Further, Applicant submits that the combination of Nonweiler, Watkins, and Crinon is improper. In this regard, the Office Action combined Watkins with Nonweiler the claims on the solely expressed basis that “it would have been obvious ... in order to improve organization of the media stored on a particular medium.” (see e.g., FINAL Office Action, p. 12). Similarly, the Office Action further combined Crinon on the expressed basis that “it would have been obvious ... so that it can be stored into another VOB-Angle-n storage area as taught by the proposed combination of Nonweiler and Watkins to allow for the user with the option to view different types of video on the stored on the medium.” (FINAL Office Action, p. 12).

These rationales are both incomplete and improper in view of the established standards for rejections under 35 U.S.C. § 103.

In this regard, the MPEP section 2141 states:

The Supreme Court in KSR reaffirmed the familiar framework for determining obviousness as set forth in *Graham v. John Deere Co.* (383 U.S. 1, 148 USPQ 459 (1966))... As reiterated by the Supreme Court in KSR, the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries. The factual inquiries enunciated by the Court are as follows:

- (A) Ascertaining the differences between the claimed invention and the prior art; and
- (B) Ascertaining the differences between the claimed invention and the prior art; and
- (C) Resolving the level of ordinary skill in the pertinent art.

In addition:

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention and
- (D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

As reflected above, the foregoing approach to obviousness determinations was recently confirmed by the United States Supreme Court decision in KSR

INTERNATIONAL CO. V. TELEFLEX INC. ET AL. 550 U.S. 1, 82 USPQ2d 1385, 1395-97 (2007), where the Court stated:

In *Graham v. John Deere Co. of Kansas City*, 383 U. S. 1 (1966), the Court set out a framework for applying the statutory language of §103, language itself based on the logic of the earlier decision in *Hotchkiss v. Greenwood*, 11 How. 248 (1851), and its progeny. See 383 U. S., at 15–17. The analysis is objective: “Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.” *Id.*, at 17–18.

Indeed, as now expressly embodied in MPEP 2143, “[t]he **key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious**. The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit.”

(*Emphasis added, MPEP 2143*). “Objective evidence relevant to the issue of obviousness **must** be evaluated by Office personnel.” (MPEP 2141). “The key to supporting any rejection under 35 U.S.C. 103 is the **clear articulation of the reason(s)** why the claimed invention would have been obvious. The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 **should be made explicit**. The Court quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that ‘[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.’” (MPEP 2141).

Simply stated, the Office Action has failed to at least (1) ascertain the differences between and prior art and the claims in issue; and (2) resolve the level of ordinary skill in the art. Furthermore, the alleged rationale for combining the references is merely an improper conclusory statement that embodies clear and improper hindsight rationale. For at least these additional reasons, Applicant submits that the rejections of all claims are improper and should be withdrawn.

For at least these reasons, Applicant submits that the rejection of claim 31 is improper and should be withdrawn. As claims 32-35 depend from claim 31, the rejections of these claims should be withdrawn for at least the same reasons.

New Claim 36

New claim 36 patently defines over the cited art for at least the reason that claim 36 depends from claim 1.

CONCLUSION

Applicant respectfully submits that all pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephone conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

/Daniel R. McClure/

Daniel R. McClure
Reg. No. 38,962

**THOMAS, KAYDEN, HORSTEMEYER
& RISLEY, L.L.P.**
600 Galleria Parkway SE
Suite 1500
Atlanta, Georgia 30339
(770) 933-9500